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ABSTRACT

Low-Gain Regenerative Amplifier System

A regenerative amplifier system that is optimized for low-gain gain media is provided. The system is configured to include a minimum number of intra-cavity elements while still eliminating the leakage of the seed pulses from the output beam. In addition, the contrast ratio of the amplified pulses is increased even considering the long build-up time that is required in low-gain regenerative amplifiers. This is accomplished using a single Pockels cell between the oscillator and amplifier to select a single seed pulse for the cavity, instead of using a Faraday isolator. This directs the unwanted seed pulses in a separate direction from the output pulse. When the amplified pulse exits the cavity, it is directed in a direction away from the oscillator by the same Pockels cell. Only one additional Pockels cell and one polarizer are required inside the regenerative amplifier cavity.